

Minist. of the United States.
Jan. 1838.

Sir,

I had the honor to receive your letter of the 14th of October, accompanied by a "Memorial of Louis Fouché-Langeur, proposing Congress to substitute his invention called German Silver, in place of the Copper Coinage of the United States." On this Memorial you ask my opinion, to be laid before the Committee on Finance of the Senate, at the present session. I have accordingly given to the matter my full consideration, and have been led to form an opinion unfavorable to the project of Mr. Fouché-Langeur, of measures which I now forward respectfully to lay before you.

1st. — The German Silver, a German, or Pachtong is a complicated and very variable compound, as is shown by the following table of analyses; ~~of specimens which could be~~ in which

1st. exhibits the composition of the best German manufactured by Horniger at Berlin, in Prussia;

2d. that of Pachtong, a compound long since employed in China, and analysed by Engstrom;

3d. another kind of Pachtong, said to cost in China one fourth its weight in silver,

analysed by Do. Tyfe;

No. 4 a compound known in Central Germany for more than eighty years as the Sphaler White Copper, — analysed by Steffens;

No. 5, Argenton, manufactured in England, analysed in 1833 by Prof. Jan C. Breth, ^{now} of the Franklin Institute.

Of these, No. 6 presents an compound as follows:

Copper. Zinc. Nickel. Iron.

No. 1 — 53. — 29. — 18.

2 — 40.6 — 43.8 — 15.6

3 — 40.4 — 25.4 — 31.6 — 2.6

4 — 88. — — 8.7 — 1.7 — 0.6 sulphur

5 — 58.3 — 17. — 20.9 — 1.2 — 0.8 Cobalt
— 0.7 silver & arsenic

In the two first analyses the iron is estimated with the nickel, and cobalt is included in the nickel of all the compounds.

It appears, then, that the German Silver is, ^{at least} a quintuple compound, of very variable and uncertain proportions: a serious objection, and questionably, to its employment in coinage.

2d. — The foregoing objection would not be of full weight, if the different varieties of the compound could be readily distinguished by their external characters. But this is by no means the case. It is only

by experimental ^{systems} ~~means~~ that any difference between them can be detected.

3d. — But a more serious, and, in my judgment, a fatal objection, is, that equal difficulty occurs in distinguishing the varieties by chemical analyses. Professor Breth, in answer to a question proposed by me on this point, ^{that} makes the following statement. — "An accurate and safe assay is necessary to determine the proportions of the ingredients in Argenton; requiring for one analysis at least two weeks. The copper may readily be estimated; the arsenic, if there be some present, with much more difficulty; the amount of iron is not estimated or estimated without much trouble; it is exceedingly difficult to separate the cobalt and nickel; and it is almost impossible, for an experienced hand, to separate the zinc and nickel with accuracy."

How different is this from the assay of the combinations of gold, silver, and copper, ^{which} ~~that~~ ^{about} ~~into~~ into the pure coins of all countries? This assay is made with care, and safe without loss of time, and with an accuracy which is almost mathematical.

4/ 4th. — It is not only difficult to determine the proportions of the ingredients in German Silver already prepared, but it is exceedingly difficult to prepare it in definite proportions from these ingredients, as they are found. — Nickel, which is the characteristic constituent of the German Silver, is chiefly obtained from a mineral called Copper-nickel, and from the waste of small-cakes. It is never found, and cannot be practically obtained, wholly free from cobalt, and it likewise contains arsenic and iron; — and as these metals are in variable proportions, the compound into which they enter cannot be uniform. — But there is another difficulty in the manufacture. When the ingredients are introduced into the crucible, and fused together, a portion of the zinc is volatilized, and must be replaced by a fresh quantity, and thus also it is rendered impossible to obtain a compound of uniform proportions.

5th. Another serious objection to the use of German Silver in coinage is the ease with which it may be imitated by less expensive proportions of the same ingredients, or by other compounds of

still less cost, such as pewter, bismuth, &c., or by tin. — A careful examination might indeed enable us to distinguish the latter substances from German Silver; but who would give this careful examination to coins of low value? The danger of detection would hardly be such as to deter the counterfeiter, where so great a gain would be ~~presently~~ afforded.

6th. — It is also an objection to ^{this} compound that it bears a considerable near resemblance to silver, so that ~~less~~ ^{some} embarrassment and loss might frequently occur, from confounding the two kinds of coins. Our present ~~varieties~~ ^{coins}, — of gold, silver, and copper, — do not offer any such difficulty.

7th. — The last objection that I shall state is the uncertainty in the price of the German Silver. — Purchasing copper at 25 cents a pound, zinc at 5 cents, and nickel at 75 cents, the materials entering into a pound (avoirdupois) of Homage's composition would cost 28 cents, — and of the Chinese Paktong analyzed by Engstrom only 24 cents. Now the one copper platelets cost us 32 cents per pound; and, if the above estimate from the ingredients gives even an approxi-

making to the true value of the German Silver, the only advantage promised from its substitution for copper in coinage is without foundation, for the weight of the coins could not be diminished. I know that the best impure German Silver costs much more than the above estimate, but we cannot infer from this the price at which it could be made here on a large scale. - Indeed, if the project of Dr. Fouchtwaenger should be adopted, a great difficulty would be presented in determining the just weight to be given to the new coins. This specimen cent, which weighs 46 grains, would at 28 cents a pound for the metal, be worth but less than one-fifth of cent., and to be of the proposed value would require the metal to be worth \$1.52 per pound. The memorial of Dr. Fouchtwaenger seems to imply that the German Silver is his "invention," and to suppose that, on this ground, he is to have ^{a monopoly at first, if not} at least a monopoly, for the supply to the Mint. It is scarcely necessary for me to state that there is no just foundation for either of these claims.

On the whole, it is my decided opinion that it would not be proper to abandon our copper coinage in favor of the proposed substitute; and you will observe that in presenting this opinion, I have not thought it necessary to bring to your view the many advantages belonging to the copper coinage; - its profit to the government, - (the only ^{prejudice} offset to the expenses of the metal, -) the habit which it has in the habits of the people; - and ^{the} ~~the~~ loss which would be sustained by its depreciation, or the confusion which would arise from a double circulation of the same class.

I am, Sir, most respectfully

Your faithful servant,

R. M. Patterson

(Director U. S. Mint)

J. / Hon. Thos. H. Blanton,
Senator, &c. &c.

Mint of the United
States January 1, 1838

Sir,

I had the honor to receive your letter of the 16th of October, accompanied by a “Memorial of Lewis Feuchtwanger, praying Congress to substitute his invention called German Silver, in place of the copper coinage of the United States.” On this memorial you ask my opinions, to be laid before the committee on Finance of the Senate at the present session. I have accordingly given to the committee my full consideration, and have been led to form an opinion unfavorable to the project of Dr. Feuchtwanger, material which I now proceed respectfully to lay before you.

First. The German Silver, Argentan, or Packfong, is a complicated and many variable compound, as is shown by the following table of analysis; in which:

No. 1 exhibits the composition of the best Argentan manufactured by Henniger, at Berlin, in Prussia,

No. 2 that of Packfong, a composition long since employed in China, and analyzed by Engstom;

No. 3 another kind of Packfong, said to cost in China one fourth its weight in silver, analysed by Dr. Fyfe;

No. 4 a compound known in Central Germany for more than eighty years as the Spehler White Copper, analyzed by Keferstein;

No. 5 Argentan manufactured in England, analyzed in 1833 by Prof. James C. Booth, now of the Franklin Institute.

Of these, 100 parts are compounded as follows:

No	Copper	Zinc	Nickel	Iron	Other
1	53.0	29.0	18.0		
2	40.6	43.8	15.6		
3	40.4	25.4	31.6	2.6	
4	88.0	0.0	8.7	1.7	0.6 Sulphur
5	58.3	17.0	20.9	1.2	0.8 Cobalt, 0.7 Silver & Arsenic

In the two first analyzed, the iron is estimated with the nickel, and cobalt is included in the nickel of all the compounds.

It appears, then that the German Silver is at least a quintuple compound, of many variable and uncertain proportions: a serious objection unquestionably, to its employment in coinage.

2nd The foregoing objection would be of less weight if the different varieties of the compound could be readily distinguished by their external characters. But this is by no means the case. It is only by experienced persons that any difference between them can be detected.

3rd But a more serious, and, in my judgement, a fatal objection, is, that equal difficulty occurs in distinguishing the varieties by chemical analyses. Professor Booth, in answer to a question

proposed by me on this point, makes the following statement: "An arduous and expensive assay is necessary, to determine the proportions of the ingredients in Argentan; requiring for one analysis at least two weeks. The copper may readily be estimated; the arsenic, if there be some present, with much more difficulty; the amount of iron is not ascertained without much trouble; it is exceedingly difficult to separate the cobalt and nickel with accuracy." How different is this from the assay of the combinations of gold, silver, and copper, which alone enter into the present coins of all countries? This assay is made with ease, without loss of time, and with an accuracy which is almost mathematical.

4th It is not only difficult to determine the proportions of the ingredients in German Silver already formed, but it is exceedingly difficult to prepare it in definite proportions from these ingredients, as they are found. Nickel, which is a characteristic constituent of German Silver, is chiefly obtained from a mineral called copper-nickel, and from the refuse of smelt-works. It is never found, and cannot be practically obtained, wholly free from cobalt, and it likewise contains arsenic, and iron; and as these metals are in variable proportions, the compound into which they enter cannot be uniform. But there is another difficulty in the manufacture. When the ingredients are introduced into the crucible, and fused together, a portion of the zinc is volatilized, and must be replaced by a fresh quantity, and thus also it is rendered impossible to obtain a compound of uniform proportions.

5th Another serious objection to the use of German Silver in coinage is the ease with which it may be imitated by less expensive proportions of the same ingredients, or by other compounds of still less cost, such as pewter, britannium, etc. or by tin. A careful examination may indeed enable us to distinguish the latter substances from German Silver; but who would give this careful examination to coins of low value? The danger of detection would hardly be such as to deter the counterfeiter, where so great a gain would be offered.

6th It is also an objection to this compound that it has a near resemblance to Silver, so that embarrassment and loss might frequently occur, from compounding the new kinds of coins. Our present coins, of gold, silver and copper do not offer any such difficulty.

7th The last objection that I shall state is the uncertainty in the price of the German Silver. Reckoning copper at 25 cents a pound, zinc at 5 cents, and nickel at 75 cents, the materials entering into a pound (avoirdupois) of Henninger's Argentan would cost 28 cents, and of the Chinese Packfong analyzed by Engstrom only 24 cents. Now our copper planchets cost is 32 cents per pound; and, if the above estimate from the ingredients gives even an approximation to the true value of the German Silver, the only advantage perceived from its substitution for copper in coinage is without foundation, for the weight of the coins could not be diminished. I know that the best imported German Silver costs much more than the above estimate, but one cannot infer from this the price at which it could be made here on a large scale. Indeed, if the project of Dr. Feuchtwanger should be adopted, a great difficulty would be presented in determining the final weights to be given to the new coins. The specimen cent, which weighs 46 grains, would at 28 cents a pound for the metal, be worth less than one-fifth of cent, and to be of the proposed value would require the metal to be worth \$1.52 per pound. The memorial of Dr. Feuchtwanger seems to imply that the German Silver is his "invention," and to suppose that on this ground, he is to have a preference at least, if not a monopoly, for the supply to the Mint. It is scarcely necessary for me to state that there is no just foundation for either of these claims. On the whole it is my decided opinion in that it would not be proper to abandon our copper coinage in favor of the

proposed substitute; and you will observe that in presenting this opinion, I have not thought it necessary to bring to your view the many advantages belonging to the copper coinage; its profit to the government, (the only pecuniary offset to the expenses of the mint) the hold which it has on the habits of the people; and either the loss which would be sustained by its suppression or the confusion which would arise from a double circulation of the same class.

I am, sir, most respectfully
Your faithful servant,
R.M. Patterson,
Director, U.S. Mint